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GB 2347644 A GB 2235869 A
GB 2055689 A GB 1438790 A
US 4277024 A

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(54) Abstract Title

Treatment of textile surfaces with a patch

(57) Textile surfaces are treated with a treatment fluid retaining polymer patch, and force is applied to the patch to deform the polymer and release the treatment fluid. The fluid may be a cleansing agent, insecticide, perfume, antibiotic or antistatic agent. The polymer is suitably a hydrogel. In one embodiment the patch is in roller form.

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Fig.1.

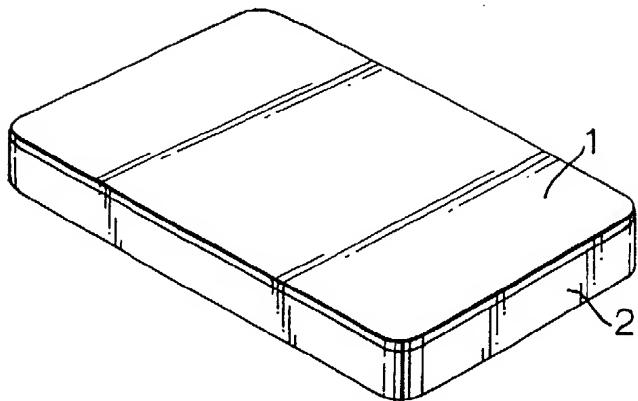


Fig.2.

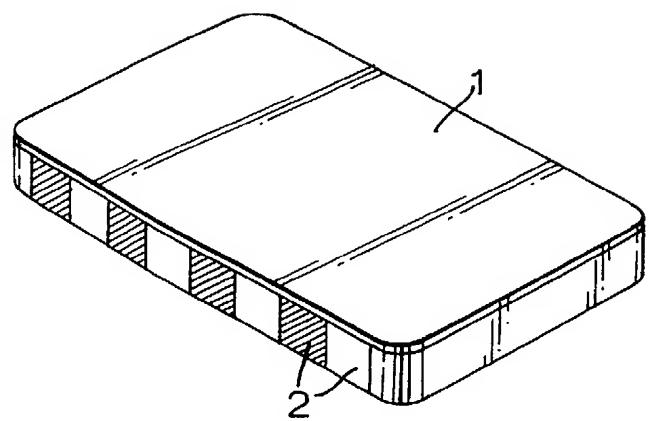
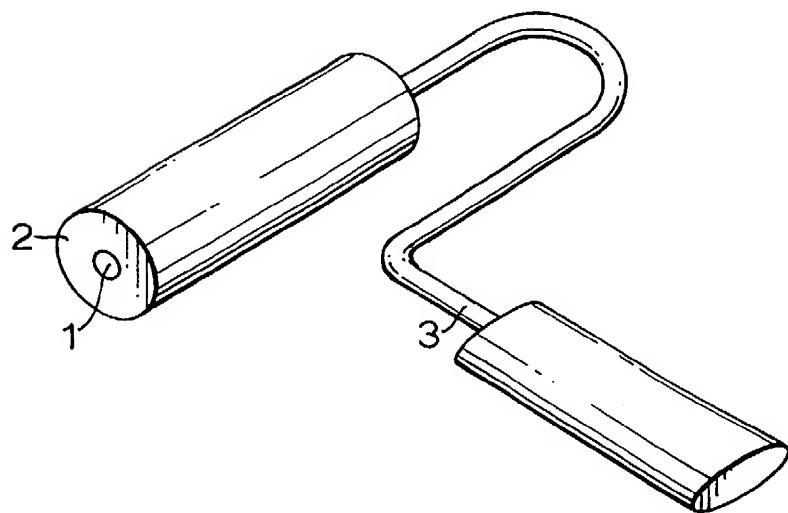


Fig.3.



A Method for the Treatment of Textile Surfaces and
Compositions for use therein

5 The present invention relates to a method for the treatment of textile surfaces and to compositions for use therein.

10 It is well known to treat textile surfaces such as carpets, mats, upholstery, fabrics and wall-coverings in various ways, for example to impart a fragrance thereto, to condition them such as by the use of antistatic agents or to cleanse them such as by the use of powders or liquids.

15 Typically, some water and a machine is used to complete the washing task. However, for treatment of spot stains or soil it is not necessary to clean the whole textile item, cleaning just the area of textile item soiled would be more convenient. It would also be 20 convenient to deal with such a stain or soil immediately.

25 Therefore we have devised a convenient stain/soil removing patch which, in its preferred embodiment, comprises a polymer applied to a backing which polymer contains a textile treatment composition which is released when the patch is applied to the textile item. In use the patch is applied to the textile item and release of a textile treatment composition is essential through surface action at the interface between the 30 polymer and textile item (such as by wicking, capillary action or diffusion) or physically exuding the composition by applying a force to the patch. Depending

on the polymer used the composition may be reabsorbed after pressure is released. In one embodiment the patch is then removed, preferably by peeling.

5 In an alternative embodiment the patch is left remaining on the textile article and is made from a water-soluble or dispersible material which dissolves in a wash liquor.

10 A feature of the invention is a textile treatment patch comprising:

15 a treatment fluid retaining polymer;
optionally a fluid impervious backing attached to
the polymer; and
a water impervious external wrapping covering
substantially all of the polymer, preferably
covering the entire textile treatment patch.

20 Accordingly, the present invention also provides a method for the treatment of a textile which comprises the steps of:-

25 i) applying to the textile a textile treatment patch which comprises a treatment fluid retaining polymer; an optional additional step is;

30 ii) applying force to the patch to deform the polymer and release the treatment composition; and optionally the following additional step(s);

iii) removing the force from the patch to allow the polymer to reabsorb treatment fluid and soil into the treatment composition, preferably into the polymer; and

5 a) immersing the textile item into a wash liquid into which the treatment composition will dissolve or disperse; or

 b) removing the patch.

10

The treatment fluid may act in at least one or more of the following:- cleansing the textile surface, in which case a suitable cleansing fluid is used; insect-proofing, in which case an insecticidal fluid is used; 15 fragrancing, in which case a perfumed fluid is used; a biocidal or biostatic treatment in which case an antibiotic fluid is used; residual treatment, for example with an antistatic fluid or any of the above fluids so as to achieve a residual or protracted effect.

20

Preferably the treatment fluid is a cleaning fluid, this will be a composition of one or more of the following; a bleach (with or without a bleach activator), an enzyme system (including any necessary stabilisers) 25 and at least one surfactant.

Bleach

Peroxygen bleaching agents are preferred. Suitable 30 peroxygen bleaching compounds include sodium carbonate peroxyhydrate and equivalent "percarbonate" bleaches, sodium pyrophosphate peroxyhydrate, urea peroxyhydrate,

and sodium peroxide. Persulfate bleach (e.g., OXONE, manufactured commercially by DuPont) can also be used.

Peroxygen bleaching agents, the perborates, the 5 percarbonates, etc., are preferably combined with bleach activators, which lead to the in situ production in aqueous solution (i.e., during the washing process) of the peroxy acid corresponding to the bleach activator. Various nonlimiting examples of activators are disclosed 10 in US Patent 4,915,854, issued April 10, 1990 to Mao et al, and US Patent 4,412,934. The nonanoyloxybenzene sulfonate (NOBS) and tetraacetyl ethylene diamine (TAED) activators are typical and are preferred, and mixtures thereof can also be used. See also US 4,634,551 for other 15 typical bleaches and activators useful herein.

Ideally from 0.1 to 20% by weight of the composition is a bleach, with or without a bleach activator.

20 Enzymes

Enzymes can be included in the formulations herein for a wide variety of fabric laundering purposes, including removal of protein-based, carbohydrate-based, or 25 triglyceride-based stains, for example, and for the prevention of dye transfer, and for fabric restoration. The enzymes to be incorporated include proteases, amylases, lipases, cellulases, and peroxides, as well as mixtures thereof. Other types of enzymes may also be 30 included. They may be of any suitable origin, such as vegetable, animal, bacterial, fungal and yeast origin. However, their choice is governed by several factors such

as pH-activity and/or stability optima, thermostability, stability versus active detergents, builders and so on. In this respect bacterial or fungal enzymes are preferred, such as bacterial amylases and proteases, and 5 fungal cellulases.

Enzymes are normally incorporated at levels sufficient to provide up to about 5 mg by weight, more typically about 0.01 mg to about 3 mg of active enzyme per gram of the 10 composition. Stated otherwise, the compositions herein will typically comprise from about 0.001 % to about 5 %, preferably 0.01 %-1 % by weight of a commercial enzyme preparation. Protease enzymes are usually present in such commercial preparations at levels sufficient to provide 15 from 0.005 to 0.1 Anson units (AU) of activity per gram of composition.

Surfactant

20 Non-limiting examples of surfactants useful herein typically at levels from about 1 % to about 55 %, by weight, of the treatment fluid and comprise an anionic such as sulphonates, sulphates and ether sulphates or/and a nonionic such as a ethoxy or propoxylated alkyl, fatty 25 acid or alcohol. These include the conventional C11-C18 alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C10-C20 alkyl sulfates ("AS"), the C10-C18 secondary (2,3) alkyl sulfates of the formula $\text{CH}_3(\text{CH}_2)_x(\text{CHOSO}_3-\text{M}^+)_x\text{CH}_3$ and $\text{CH}_3(\text{CH}_2)_y(\text{CHOSO}_3-\text{M}^+)_y\text{CH}_2\text{CH}_3$ 30 where x and (y + 1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilising cation, especially sodium, unsaturated

sulfates such as oleyl sulfate, the C10-C18 alkyl alkoxy sulfates ("AExS"; especially EO 1-7 ethoxy sulfates). C10-C18 alkyl alkoxy carboxylates (especially the EO₁₋₅ ethoxycarboxylates), the C10-18 glycerol ethers, the C10-5 C18 alkylpolyglycosides and their corresponding sulfated polyglycosides, and C12-C18 alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C12-C18 alkyl ethoxylates ("AE") including the so-called narrow peaked 10 alkyl ethoxylates and C6-C12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C12-C18 betaines and sulfobetaines ("sultaines"), C10-C18 amine oxides, and the like, can also be included in the overall compositions. The C10-C18 N-alkyl polyhydroxy 15 fatty acid amides can also be used. Typical examples include the C12-C18 N-methylglucamides. See WO 92/06154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C10-C18 N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl 20 C12-C18 glucamides can be used for low sudsing. C10-C20 conventional soaps may also be used. If high sudsing is desired, the branched-chain C10-C16 soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful anionic, 25 amphoteric, nonionic or cationic surfactants are listed in standard texts.

It will be appreciated that certain treatment fluids need not be reabsorbed into the patch, such as an 30 insecticidal fluid.

In carrying out the method of the invention the force may be applied manually to the composition, for example by rubbing.

5 When force is applied treatment fluid exudes from the polymer and it is believed that this is the mechanism whereby the treatment material is first distributed amongst the fibres of the textile material. When force ceases to be applied to the polymer containing the
10 treatment fluid the polymer, depending on the polymer selected, may reabsorb at least a substantial part of the treatment fluid or, if preferred, an insubstantial or no part of the treatment fluid. A consequence of re-absorption is reabsorbing soil into polymer and a reduced
15 amount of free treatment fluid in the textile material, which can then dry relatively rapidly. Alternatively the treatment fluid is allowed to remain in the textile material as discussed above.

20 The present invention also includes within its scope solid textile treatment compositions which comprise 0.3 to 90% by weight of a polymer, 5 to 99.5% by weight of water, optionally up to 40% by weight of an organic solvent, and at least one ingredient selected from:

25 0.1 to 10% by weight of a perfume,
 0.001 to 1% by weight of an enzyme,
 0.01 to 5% by weight of an insecticide,
 0.01 to 5% by weight of an antistatic agent,
30 0.01 to 5% by weight of an antimicrobial agent,
 0.01 % - 1 % by weight of a commercial enzyme preparation,

0.1 to 20% by weight of a bleach, with or without a bleach activator.

and

0.01 to 55% by weight of a surfactant.

5

The preferred compositions of the present invention contain from 10 to 25% by weight of a hydrogel and 35 to 90% by weight of water. For use as fragrancing compositions the preferred compositions contain from 0.1 to 2.0% by weight of a perfume; for use as insecticidal compositions the preferred compositions contain from 0.5 to 1.5% by weight of an insecticide; for use as antistatic treatment compositions the preferred compositions contain from 0.3 to 1.0% by weight of an antistatic agent; for use as antimicrobial compositions the preferred compositions contain from 0.3 to 1.0% by weight of an antimicrobial agent; whilst the use as cleansing compositions the compositions contain from 0.2 to 2.0% by weight of a surfactant.

20

By the term "hydrogel" as used herein is meant a natural or synthetic polymeric material which possesses the ability to swell in water. The hydrogel may be water-insoluble or water-soluble. Generally, synthetic hydrogels are formed by polymerizing a hydrophilic monomer in an aqueous solution under conditions where the polymer becomes cross-linked so as to form a three dimensional polymer network. Natural hydrogels are also included, such as alginates and polysaccharides, such as xanthan and locust bean gum.

Preferably, the hydrogel is a hydrophilic homopolymer or copolymer of acrylic or methacrylic acid, a salt or ester thereof; a homopolymer or copolymer or acrylamide or acrylonitrile, cellulose ether,
5 carboxylated cellulose derivative, polyalkylene oxide or polyurethane. The polymer is cross-linked to a relatively low degree and but for the cross-linking would be essentially water-soluble.

10 The polymer may include in its structure a polysaccharide such as starch, for example in a graft copolymer.

15 Particularly preferred polymers of interest as disclosed in WO046319.

The polymer selected may be chosen for a number of reasons:

20 i) to retain and release treatment fluid
ii) to reabsorb released treatment fluid
iii) to provide adhesion to the textile article, by surface fones or by tackiness.
iv) providing a structural aspect to the
25 patch.

Usually, the polymer has a number of free carboxylic acid groups neutralisable with, for example, an alkali metal ion.

30 Preferably the polymer is attached to a backing which can be water-soluble or water-insoluble. The

backing may be any suitable material formed into a woven or non-woven piece. Alternatively, the backing can take the form of a roller to the surface of which is attached the polymer. The function of the backing is to provide 5 structural support to the polymer, allow easy application and removal to the textile article and also to direct application of the fluid into the textile article. In use the pressure is applied to the polymer through the backing to release the treatment fluid. Preferably the 10 backing is water impervious to prevent the treatment fluid coming into contact with the user and to ensure a generally unidirectional flow of treatment fluid from the polymer into the textile.

15 Ideally the article is wrapped in a fluid impervious wrapping to prevent evaporation of the treatment fluid. The wrapping is ideally comprised of one or more mutually peelable polymer sheets.

20 The patch may be a one off disposable item or reusable, especially when the polymer reabsorbs the treatment fluid when used, or by recharging the polymer with treatment fluid.

25 The invention is further illustrated by the following non-limiting drawing:

30 Figure 1 shows a patch with a water impervious backing (1) made of a polymer sheet to which is attached a hydrogel (2) containing a surfactant treatment fluid.

Figure 2 shows a patch with a water impervious backing (1) made of polymer sheet to which is attached two different hydrogels (2) alternatively along the backing sheet. The first hydrogel 5 contains a treatment fluid containing bleach and the second contains a treatment fluid containing an enzyme.

Figure 3 shows a rolling patch in which the backing 10 (1) is a solid polymer core to which is attached a hydrogel (2) containing a treatment fluid and to which is also attached a handle (3) through which pressure can be applied to the backing (1).

15 The fluids used in the method of the invention are to some extent determined by the treatment undertaken. Generally speaking the treatment fluid will be water optionally with an organic solvent such as an alcohol, hydrocarbon or halohydrocarbon; and a surfactant such as 20 anionic, cationic, non-ionic and/or amphoteric surfactant. An organic solvent is preferably included in the compositions of the invention in an amount of from 5 to 50% by weight. The fluid may be in the form of single or multiphase liquid. For the former a co-solvent becomes 25 necessary where the remaining components are immiscible. For the latter, the separate phases may be emulsified optionally with the aid of an emulsifying agent which may be the same as or different from any surfactant present for its detergent function.

30 The patch may be any suitable size but for convenience is less than 10cm in length or width. The patch may be

dispensed from a roll or strip in which multiple patches are mutually attached via a tear line, ideally found in the external packaging.

Claims

1. A textile treatment patch comprising:

5 a treatment fluid retaining polymer;
optionally a fluid impervious backing attached to
the polymer; and
a water impervious external wrapping covering
substantially all of the polymer, preferably
10 covering the entire textile treatment patch.

2. A method for the treatment of a textile which
comprises the steps of:-

15 i) applying to the textile a textile treatment
patch which comprises a treatment fluid
retaining polymer; an optional additional step
is;

ii) applying force to the patch to deform the
polymer and release the treatment composition;
and optionally the following additional
20 step(s);

iii) removing the force from the patch to allow the
polymer to reabsorb treatment fluid and soil
25 into the treatment composition, preferably into
the polymer; and

30 a) immersing the textile item into a
wash liquid into which the treatment
composition will dissolve or
disperse; or
b) removing the patch.

3. A method for the treatment of a textile surface
x as claimed in claim 1 in which the treatment is cleansing
with a cleansing fluid, insect-proofing with an
5 insectidical fluid, fragrancing with a perfumed fluid,
rendering biocidal or biostatic with an antibiotic fluid,
or residual treatment with an antistatic fluid or any of
the foregoing fluids.

10 4. A method as claimed in claim 1 or claim 2 in
which the composition is applied and the force is applied
to the composition through the fingers of the user.

15 5. A method is claimed in claim 1 or claim 2 in
which the composition is applied as a spray and the force
✓ is applied to the composition by the impact of the
composition on the textile surface.



INVESTOR IN PEOPLE

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Claims searched: 1

Examiner: Peter Davey
Date of search: 3 January 2002

Patents Act 1977

Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): A4F (FQH, FQP), A5E (ES), D1P (PA, PDA, PDB)

Int Cl (Ed.7): A01N 25/04 25/34, A47L 25/00, D06M 23/02

Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2347644 A (HODGES), see whole document	1
X	GB 2235869 A (BOSTIK), see eg. page 2, line 32 - page 3, line 6	1
X	GB 2055689 A (CAVON), see eg. page 2, lines 20-130	1
X	GB 1438790 (HURKA), see eg. claims 1 and 2	1
X	US 4277024 (SPECTOR), see eg. col. 3, line 46 - col. 4, line 4	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.